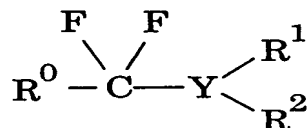


CLAIMS

1. A method of fluorination which comprises fluorinating a saccharide using a fluorinating agent represented by general formula (I):



(I)

wherein Y represents nitrogen atom or phosphorus atom, R⁰, R¹ and R² represent hydrogen atom or an alkyl or aryl group which may have substituents, the atom and the groups represented by R⁰, R¹ and R² may be a same with or different from each other atom, and two or three of the groups represented by R⁰, R¹ and R² may be bonded to each other to form a ring.

2. A method of fluorination according to Claim 1, wherein, in general formula (I), Y represents nitrogen atom, R⁰ represents 3-methylphenyl group or 2-methoxyphenyl group, and R¹ and R² represent ethyl group.

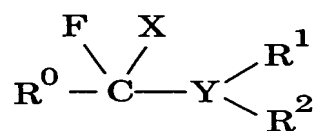
3. A method of fluorination according to any one of Claims 1 and 2, wherein the saccharide is fluorinated by a thermal reaction.

4. A method of fluorination which comprises fluorinating a substrate by bringing the substrate and a fluorinating agent into reaction with each other under irradiation with at least one of microwave and electromagnetic wave having a wavelength around a microwave region.

5. A method of fluorination according to Claim 4, wherein the substrate is fluorinated by bringing the substrate and the fluorinating agent into reaction with each other under irradiation with microwave having a frequency of 1 to 30 GHz.

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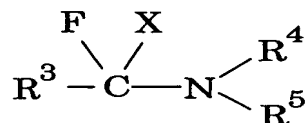
6. A method of fluorination according to any one of Claims 4 and 5, wherein the fluorinating agent is a compound represented by general formula (II):



(II)

10 wherein Y represents nitrogen atom or phosphorus atom, X represents hydrogen atom or a halogen atom, R⁰, R¹ and R² represent hydrogen atom or an alkyl or aryl group which may have substituents, the atom and the groups represented by R⁰, R¹ and R² may be a same with or different from each other, and two or three of the groups represented by R⁰, R¹ and R²
15 may be bonded to each other to form a ring.

7. A method of fluorination according to Claim 6, wherein the fluorinating agent is a compound represented by general formula (III):



(III)

20 wherein R³, R⁴ and R⁵ each independently represent an alkyl or aryl group which may have substituents, X represents hydrogen atom or a halogen atom, and two or three of the groups represented by R³, R⁴ and

R⁵ may be bonded to each other to form a cyclic structure.

8. A method of fluorination according to Claim 7, wherein, in general formula (III), R³ represents an aryl group which may have substituents, X represents fluorine atom, and R⁴ and R⁵ represent an alkyl or aryl group having 1 to 32 carbon atoms which may have substituents.

9. A method of fluorination according to any one of Claims 6 to 8, wherein the substrate is an organic compound having at least one atom selected from oxygen atom, nitrogen atom and sulfur atom.

10. A method of fluorination according to Claim 9, wherein the substrate is a compound having hydroxyl group.

11. A method of fluorination according to Claim 10, wherein the substrate is a diol having hydroxyl groups adjacent to each other.

12. A method of fluorination according to Claim 10, wherein the substrate is a saccharide.

13. A method of fluorination according to Claim 12, wherein the fluorinating agent is a compound represented by general formula (II) in which X represents fluorine atom.

14. A method of fluorination according to Claim 13, wherein the fluorinating agent is a compound represented by general formula (II) in

which X represents fluorine atom, Y represents nitrogen atom, R⁰ represents 3-methylphenyl group or 2-methoxyphenyl group, and R¹ and R² represent ethyl group.

5 15. A method of fluorination according to any one of Claims 12 to 14, wherein the saccharide is a compound selected from monosaccharides, glycosides, anhydrides of monosaccharides, oligosaccharides and polysaccharides.

10 16. A method of fluorination according to Claim 9, wherein the substrate is a compound having carbonyl group or carboxyl group.

17. A method of fluorination according to Claim 9, wherein the substrate is an epoxide.

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18. A method of fluorination according to any one of Claims 4 and 5, wherein the fluorinating agent is a complex compound comprising HF and a base.

20 19. A method of fluorination according to Claim 18, wherein the fluorinating agent is an alkylamine-HF complex compound.

20. A method of fluorination according to Claim 19, wherein the fluorinating agent is a triethylamine-HF complex compound.

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21. A method of fluorination according to any one of Claims 18 to 20,

wherein the fluorination is conducted in a presence of an agent accelerating a reaction.

22. A method of fluorination according to any one of Claims 18 to 21,
5 wherein the substrate is a compound having hydrogen atom activated by a substituent at an α position, a β -position or a γ -position, a silyl ether compound, a compound having an unsaturated group, hydroxyl group, a halogeno group, amino group, diazo group, triazeno group or isocyano group as a functional group, or a cyclic compound having three-membered
10 or greater ring which may have heteroatoms.

23. A method of fluorination according to any one of Claims 18 to 21,
wherein the substrate is a saccharide or a cyclic compound having cyclopropane ring, oxirane ring, aziridine ring or 1,3-dithiane ring.

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